

CLAIMS

1. A mobile map display apparatus provided with
a geomagnetic sensor for detecting earth-magnetism,
a display unit, and
5 a control unit able to calculate a geographical
bearing based on detection values of said geomagnetic
sensor and having a first display processing for display in
a direction linked with said calculated bearing when
acquiring the map and making said display unit display the
10 map and a second display processing for display fixed to a
predetermined bearing, wherein
said control unit performs the display by said second
display processing when detecting a drop in precision of
said geomagnetic sensor in displaying said map.
- 15 2. A mobile map display apparatus as set forth in claim
1, wherein said control unit monitors detection values of
said geomagnetic sensor and deems said drop in precision to
have occurred by detecting at least one of states of the
detection values exceeding a predetermined value, not
20 meeting a predetermined value, or not being stable.
3. A mobile map display apparatus as set forth in claim
1, wherein said control unit monitors detection values of
said geomagnetic sensor and deems said drop in precision to
have occurred by at least one of states of the detection
25 values exceeding a predetermined value, not meeting a

predetermined value, or not being stable continuing for a predetermined time.

4. A mobile map display apparatus as set forth in claim 1, wherein said control unit monitors detection values of said geomagnetic sensor and stores in a storage unit a current location as a precision drop region when at least one of the states of the detection values exceeding a predetermined value, not meeting a predetermined value, or not being stable occurs and a time that said state continues is within a predetermined time.

5. A mobile map display apparatus as set forth in claim 1, wherein said control unit deems said drop in precision to have occurred when said calculated bearing is not stable.

- 15 6. A mobile map display apparatus as set forth in claim 1, wherein

said apparatus is further provided with a GPS signal receiver for receiving GPS signals, and

- said control unit deems said drop in precision to have occurred when a reception level of said GPS signals is low.

7. A mobile map display apparatus as set forth in claim 6, wherein said control unit stops said geomagnetic sensor or stops the calculation of said bearing when detecting the occurrence of a drop in precision.

- 25 8. A mobile map display apparatus as set forth in claim

6, further having a position information acquiring unit for acquiring information of a current location based on said GPS signals and a wireless communication unit able to connect to a communication network,

5 said control unit making said wireless communication unit acquire a peripheral map of a current location as said map from said communication network based on the position information acquired by said position information acquiring unit.

10 9 A mobile map display apparatus as set forth in claim 1, wherein

 said apparatus is provided with a position information acquiring unit for acquiring position information of a current location,

15 said peripheral map is linked with a precision drop region, and

 said control unit deems said drop in precision to have occurred when said current location is included in said precision drop region.

20 10. A mobile map display apparatus as set forth in claim 9, wherein said control unit stops said geomagnetic sensor or stops the calculation of said bearing when detecting the occurrence of a drop in precision.

 11. A mobile map display apparatus as set forth in claim 25 9, wherein said control unit monitors detection values of

said geomagnetic sensor and stores in a storage unit a current location as said precision drop region when at least one of the states of the detection values exceeding a predetermined value, not meeting a predetermined value, or
5 not being stable occurs and a time that said state continues is within a predetermined time.

12. A mobile map display apparatus as set forth in claim 1, wherein said control unit when the detection of a drop in precision disappears in displaying said map by said
10 second display processing based on detecting the drop in precision, changes the display of the map to said first display processing.

13. A mobile map display apparatus as set forth in claim 1, wherein said control unit when the detection of a drop
15 in precision disappears in displaying said map by said second display processing based on detecting the drop in precision, calculates a geographical bearing based on the detection values of said geomagnetic sensor and changes the display of the map to said first display processing.

20 14. A mobile map display apparatus as set forth in claim 13, wherein said control unit performs said first display processing when detection values of said geomagnetic sensor do not meet any of the conditions of exceeding a predetermined value, not meeting a predetermined value, or
25 not being stable.

15. A mobile map display apparatus as set forth in claim 1, wherein said control unit monitors for occurrence of a predetermined event changing a magnetic field in said mobile map display apparatus and, when detecting the
5 occurrence of said predetermined event, corrects said bearing in accordance with the event in said first display processing.

16. A mobile map display apparatus as set forth in claim 15, wherein
10 said apparatus is further provided with two housing having at least one display unit,

said two housings have movement mechanisms by which one housing having said display unit is connected changeably in positional relationship with the other
15 housing, and

said control unit, when detecting a change of the operating state of said movement mechanisms as said event, changes the direction of display in accordance with the positional relationship of said display unit to the other
20 housing when correcting the bearing.

17. A map display system configured by a mobile map display apparatus as set forth in claim 7 and a map providing apparatus connected to a communication network, wherein

25 said map providing apparatus stores a precision drop

region linked with a peripheral map and

said control unit acquires said precision drop region together when acquiring said peripheral map from said map providing apparatus by a wireless communication unit.

- 5 18. A map display method in a mobile map display apparatus provided with a geomagnetic sensor for detecting earth-magnetism and a display unit, comprising

a calculation step of calculating a geographical bearing based on detection values of said geomagnetic

- 10 sensor;

a map displaying step of acquiring a map and making said display unit display the map;

a first displaying step of performing the display in a direction linked with said calculated bearing; and

- 15 a second display processing step of performing the display fixed to a predetermined bearing, wherein

when detecting a drop in precision at said map displaying step, the display is performed by said second display processing step.